MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

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New updates in this issue:

- **International:** WHO reports that South Africa, New Zealand, and Australia have all recently noted slight increases in the rate of respiratory disease.
- **International:** Indonesia reports a new death due to avian influenza H5N1.

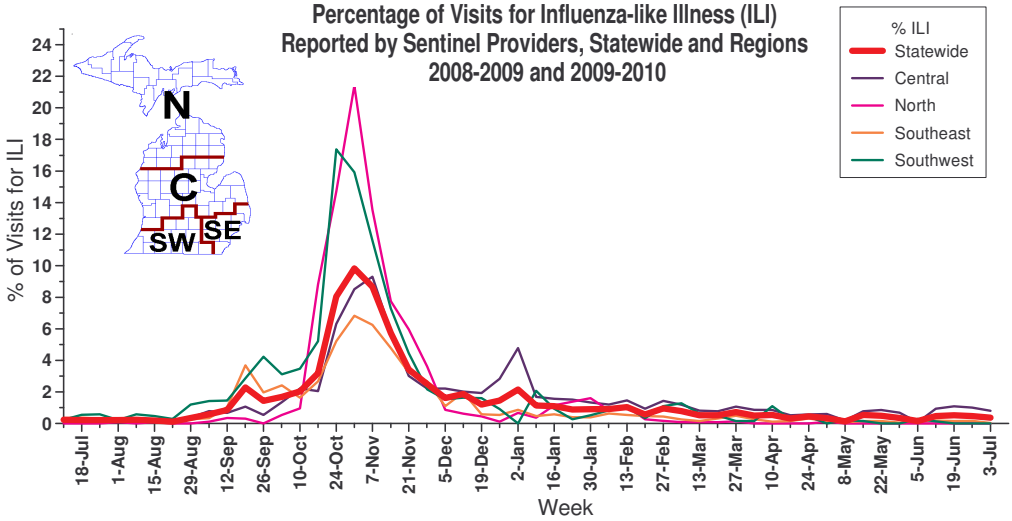
Influenza Surveillance Reports

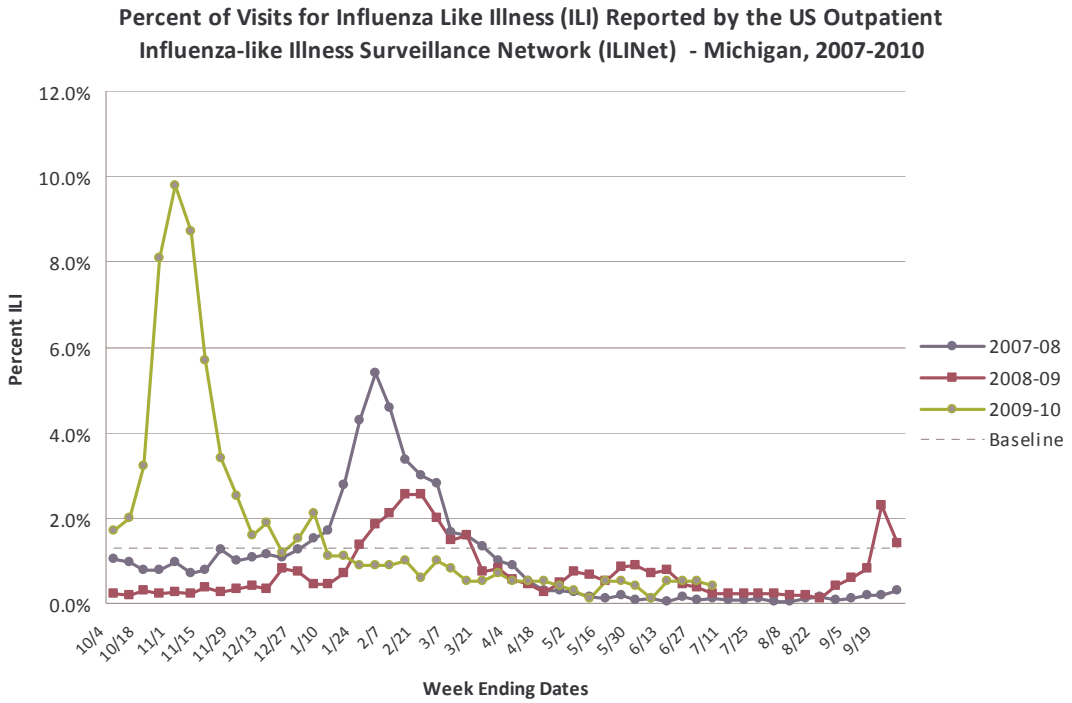
Michigan Disease Surveillance System: MDSS data for the week ending July 3rd showed that aggregate influenza case reports continued decreasing to levels normally seen after schools dismiss for summer vacation. Individual reports, including influenza and 2009 novel influenza cases, remained near the previous week's reported levels of little to no activity. Aggregate cases are similar to levels seen during the same period in 2009, while individual influenza reports are significantly lower. The decrease in individual reports is attributable to the rapid increase of cases in 2009 due to the H1N1 pandemic; current levels are consistent with surveillance data from previous non-pandemic influenza seasons.

Emergency Department Surveillance: Emergency department visits from constitutional complaints were comparable to the previous week's levels, while respiratory complaints decreased slightly. Both constitutional and respiratory complaints are at similar levels compared to the same reporting period last year. In the past week, there was one constitutional alert in the Central Influenza Surveillance Region and one respiratory alert in the Central Region.

Over-the-Counter Product Surveillance: Over the past week, OTC product sales of cough/cold aides and chest rubs remained steady, while children's electrolytes and thermometers experienced a mid-week increase but then returned to levels seen last week. All indicators are consistent with levels seen at this time last year, except for cough/cold aides and chest rubs, which are slightly increased.

Sentinel Provider Surveillance (as of July 8): During the week ending July 3, 2010, the proportion of visits due to influenza-like illness (ILI) slightly decreased to 0.4% overall. Twenty-four patient visits due to ILI were reported out of 6,562 office visits. Twenty-two sentinel sites provided data for this report. Activity decreased in one surveillance region: Central (0.8%) and no ILI activity was reported in the remaining three regions: Southeast, Southwest and North. Please note that these rates may change as additional reports are received.





As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of July 3): During June 27-July 3, no influenza isolates were identified at the MDCH Bureau of Laboratories. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 610 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza B: 1

Five sentinel laboratories reported for the week ending July 3, 2010. All laboratories (SE, SW, N) reported no influenza A or B positive test results, with very few specimens being tested. One RSV positive was noted in the SE Region.

Michigan Influenza Antigenic Characterization (as of July 8): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of July 8): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

Influenza-Associated Pediatric Mortality (as of July 8): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of July 8): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in

one outbreak in a long term care facility (SW) in February. Adenovirus was confirmed from one outbreak in an elementary school (SW) in May.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

National: To access previous Center for Disease Control and Prevention weekly surveillance reports, visit http://www.cdc.gov/flu/weekly/fluactivity.htm.

International (WHO Pandemic update 107, July 2): Summary: Worldwide, overall pandemic and seasonal influenza activity remains low. In the temperate regions of the Southern Hemisphere, Chile, and Argentina report low activity and only sporadic detections of both pandemic and seasonal influenza viruses during the early part of winter. South Africa, New Zealand, and Australia have all recently noted slight increases in the rate of respiratory disease. South Africa recently reported their first case of confirmed H1N1; however, the predominant influenza virus there currently is seasonal influenza A (H3N2). The H3N2 virus detected in South Africa is similar to the Perth-like strain, which is currently a component of the trivalent seasonal influenza vaccine. Active transmission of pandemic influenza virus still persists in localized areas of the tropics, particularly in South and Southeast Asia, the Caribbean and West Africa. During the last 2 to 3 weeks, seasonal influenza H3N2 viruses have also been detected at increasing levels in Nicaragua, and low levels or sporadically in Australia, Central America, South Africa and East Africa. Global circulation of seasonal influenza virus type B viruses persists at low levels in parts of East Asia, Central Africa, and Central America.

The entire update is available online at http://www.who.int/csr/don/2010_07_02/en/index.html.

Weekly reporting of influenza activity to the CDC has concluded for the 2009-2010 season.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

National, Wild Birds (National Science Foundation, July 6): Scientists have discovered that 22 species of passerines--songbirds and perching birds--in the contiguous U.S. are carriers of low-pathogenicity avian influenza. Pathogenicity is the ability of a germ to produce an infectious disease in an organism.

The researchers report their results today in the journal BMC Infectious Diseases.

The research is supported by the joint National Institutes of Health (NIH)-National Science Foundation (NSF) Ecology of Infectious Diseases (EID) Program. At NSF, EID is co-funded by the Directorates for Biological Sciences and Geosciences.

The prevalence of influenza in waterfowl has long been known.

But the researchers' analysis of samples taken from 225 passerine species in 41 U.S. states indicates that the number of songbird species with low-pathogenicity avian influenza is greater than the number in eight other avian orders, including waterfowl.

"Avian influenza virus [AIV] is an important public health issue because pandemic influenza viruses in people have contained genes from viruses that infect birds," says Trevon Fuller, lead author of the paper and a biologist at the Center for Tropical Research at UCLA.

"Some AIV subtypes have periodically mutated from low pathogenicity to high pathogenicity forms that are lethal, for example, to poultry."

Since passerines share the same habitat as poultry, they may be more effective transmitters of this

disease than aquatic birds to humans, Fuller says.

Analysis of the geographic distribution of AIV, says Thomas Smith, also a biologist at the Center for Tropical Research at UCLA and a co-author of the paper, "can identify areas where such 'reassortment' events might occur, and how high pathogenicity might travel if it enters wild bird populations in the U.S."

Modelling the number of AIV cases is important, says Sam Scheiner, NSF program director for EID, "because the rate of co-infection with multiple AIV subtypes increases with the number of cases."

Hotspots in the contiguous U.S. for AIV cases include the Mississippi River basin, with its shallow pools of water and wetlands conducive to the spread of the virus.

On a state scale, Minnesota is predicted to have the most cases of AIV. The virus has been introduced to Minnesota turkey farms by wild birds--some 135 times since 1968.

Emily Curd, a graduate student at the UCLA Center for Tropical Research, developed a technique to detect short fragments of influenza. It proved crucial to the research, says Smith.

Her efforts, he says, "made it possible to find the virus in the many samples collected by volunteer bird-banders."

The scientists also investigated the association between AIV cases in wild birds and 12 predictor variables--some of which measured agricultural and commercial activity--and climate.

Significant predictors of the number of AIV cases in wild birds per county were thaw date in spring; the percent of the county that is harvested cropland; and minimum temperature.

Thaw date explains the number of AIV cases because if a site thaws earlier, waterfowl may occupy an area sooner. More opportunities exist for adults to infect juveniles than if the site were covered by snow and ice until later.

The amount of harvest cropland was "highly significant," the biologists found. "Agricultural activity reduces the amount of natural habitat available to avian migrants," says Fuller. The birds become crowded together in smaller areas.

Minimum temperature also emerged as important for predicting AIV cases. AIV is known to survive for a longer time in colder conditions.

During a cool-weather 1984 outbreak in Pennsylvania, for example, the virus survived in barns for as long as 105 days.

International, Human (WHO, July 5): The Ministry of Health of Indonesia has announced a new case of human infection of H5N1 avian influenza. A 34-year-old female from South Jakarta District, DKI Jakarta Province developed symptoms on 25 May, was hospitalized on 27 May and died on 1 June. Laboratory tests were positive for H5N1 virus infection. The case was possibly infected from environmental exposure to manure in her plant nursery.

Of the 166 cases confirmed to date in Indonesia, 137 have been fatal.

International, Poultry (U.S. Embassy press release, July 6): The STOP AI (Stamping Out Pandemic and Avian Influenza) Bangladesh project, funded by the United States Government through the United States Agency for International Development (USAID), will launch a Cleaning and Disinfection (C&D) program on Tuesday, July 6 to improve the security of the live bird market at Sreepur Pauroshova in Sreepur Upazila of Gazipur District.

USAID, through the STOP AI initiative, collaborated with the Sreepur Municipality, and the market committee to develop a market improvement plan to prevent the spread of Highly Pathogenic Avian Influenza (HPAI) to birds and people, including renovation of the water supply, addition of a bio-gas facility for proper waste disposal and a slaughter house. The live bird markets can be a major source of the avian influenza and can contribute to its spread in Bangladesh. STOP AI protects animals from bird flu and provides people access to safe food products and minimizes the risks of avian influenza from becoming a public health epidemic.

USAID initially piloted Cleaning and Disinfection programs in two major live bird markets in Dhaka (Mohammadpur and Kaptan bazaar). The successful outcome of these activities led to an expanded, nationwide program in which 19 additional markets were upgraded. These markets are located in Konabari Upazilla in Gazipur, and Hakimpur and Parbatipur Upazillas in Dinajpur. There has been a major positive public health impact from improving markets in these high-risk, high-density poultry areas.

International, Wild Birds (OIE [edited], July 2): Highly pathogenic avian influenza virus H5N1; China
Date of first confirmation of the event: 03/06/2010; Date of Start of Event: 09/05/2010
Date of report: 02/07/2010; Date Submitted To OIE: 02/07/2010
Province: TIBET; City: Naqu; Location: Shuanghu district
Species: Wild species; Cases: 170; Deaths: 170; Destroyed: 0; Slaughtered: 0
Affected Population: 141 brown-headed gulls (Larus brunnicephalus), 27 bar-headed geese (Anser indicus), one red-billed chough (Pyrrhocorax pyrrhocorax) and one Eurasian wigeon (Anas penelope).
Source of the outbreak(s) or origin of infection: Unknown or inconclusive
Control Measures Applied: Screening
To be applied: No Planned Control Measures
Animals treated: No; Vaccination Prohibited: No

Michigan Wild Bird Surveillance (USDA, as of July 8): For the 2010 season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza H5N1 has not been recovered from 3,962 samples tested nationwide, including 4 Michigan samples (1 live bird, 2 hunter-killed birds, 1 morbidity/mortality). For more information, visit the National HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

International Poultry and Wild Bird Surveillance (OIE): Reports of avian influenza activity, including summary graphs of avian influenza H5N1 outbreaks in poultry, can be found at the following website: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm.

For questions or to be added to the distribution list, please contact Susan Peters at PetersS1@michigan.gov

Contributors

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Table 1. H5N1 Influenza in Humans - Cases up to July 5, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_06_08/en/index.html. Downloaded 7/6/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	10	8
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	1	1	39	26
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	19	7	109	34
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	4	3	166	137
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	32	14	500	296